wave, and the third gas flow rate varies according to a second square wave. The pulsating period T in flow rate of the second and third gases may be the same time period. The third gas may be supplied into the exhausting line **320**. The flow rates of the second and third gases may be changed to form a rectangular pulse shape, and the pulsating period T may range from 3 seconds to 5 seconds.

[0069] An internal pressure of the process chamber **100** may be maintained to a desired (and/or alternatively predetermined) level ranging from about 15 mTorr to about 25 mTorr. Information on an internal pressure of the process chamber **100** measured by the chamber pressure sensor **150** may be transmitted to the control unit **500**, and the information may be used by the control unit **500** to calculate a compensation value for maintaining a desired (and/or alternatively predetermined) internal pressure of the process chamber **100**. The compensation value may be changed depending on kinds ("types"), flow rates, and pressures of one or more of the first and second gases. Information identifying a type of one or more of the first and second gasses may be stored at a memory **520** included in the control unit **500**. The control unit **500** may access the information from the memory **520** as part of calculating the compensation value. Based on the compensation value, the control unit **500** may adjustably control the third gas supplying part **420** and the control valve **445** of the injection unit **400** to adjustably control the supply of the third gas into the exhausting line **320**. In some example embodiments, the supply of third gas may be adjustably controlled such that the flow rate of the third gas into the gas exhaust assembly **300** varies according to a pulse wave, square wave, some combination thereof, or the like. In some example embodiments, the third gas flow rate varies according to a wave that is phase-shifted from a wave according to which the second gas flow rate varies (e.g., by a phase difference of half the period T). In some example embodiments, the third gas flow rate varies according to a wave that is phase shifted from the wave according to which the second gas flow rate varies by about 180 degrees. In other words, if and/or when the second flow rate is at a maximum, the third flow rate may be at a minimum, and if and/or when the second flow rate is at a minimum, the third flow rate may be at a maximum.

[0070] If and/or when the second flow rate varies according to a pulse wave (e.g., changes in a pulsed manner), internal pressures of the process chamber **100** and the exhausting line **320** may be unsteady. By supplying the third gas, whose flow rate may vary according to a wave that is phase-shifted by the phase difference of T/2 from the wave according to which the flow rate of the second gas varies, into the exhausting line **320**, it may be possible to reduce and/or prevent the unsteadiness in internal pressure of the process chamber **100** and the exhausting line **320**, such that the internal pressure of the process chamber **100** is uniform or substantially uniform. Since all of the first, second, and third gases are pumped out by the pump **340** and an amount of gas to be pumped out by the pump **340** may be maintained at a desired (and/or alternatively predetermined) level, it may be possible to uniformly or substantially uniformly maintain an amount of gas to be discharged from the process chamber **100** through the exhausting line **320** and/or a flow rate of gas that is exhausted from the process chamber **100** through the exhausting line **320**. Accordingly, an internal pressure of the process chamber **100** may be stabilized at a desired (and/or alternatively predetermined) level.

[0071] FIG. **6** is a graph showing the times taken to stabilize internal pressures of a chamber and an exhausting line, according to some example embodiments of the inventive concepts.

[0072] Referring to FIGS. **1** and **6**, an x-axis represents a process time, and a y-axis represents a ratio in amount of the second gas to the process gas. A solid line D illustrates a ratio in amount of the second gas to the process gas in the process chamber **100**, and a dotted line E illustrates a ratio in amount of the second gas to the process gas in the exhaust valve **350**.

[0073] According to some example embodiments of the inventive concepts, by adjusting a pressure of the exhausting line **320** where the exhausting line **320** has a relatively small volume, it may be possible to control an internal pressure of the process chamber **100** where the process chamber **100** has a relatively large volume. In detail, if and/or when a process starts, a process gas may be supplied into the process chamber **100**. Here, the control gas (e.g., the third gas) may be supplied into the exhausting line **320** from the injection unit **400** to cancel a change in the pressure of the process chamber **100** and the exhausting line **320**, which may be caused by the second gas to be supplied into the process chamber **100**. In some embodiments, the ratio of the second gas to the process gas in the process chamber **100** may become the same as that in the exhaust valve **350**, within a second from the start of the process. Since the process chamber **100** and the exhaust valve **350** have the same ratio of the second gas to the process gas, an amount of the process gas to be exhausted from the process chamber **100** to the exhausting line **320** may be uniform or substantially uniform. This means that an internal pressure of the process chamber **100** may be stabilized or substantially stabilized. It is possible to reliably execute the process, because the supply of the third gas into the exhausting line **320** makes it possible to stabilize the internal pressure of the process chamber **100** within a second.

[0074] FIG. **7** is a flow chart illustrating a method of controlling an internal pressure of a chamber, according to some example embodiments of the inventive concepts. In some example embodiments, the method illustrated in FIG. **7** may be implemented by one or more portions of the control unit **500**, including the processor **510**.

[0075] Referring to FIGS. **1**, **5**, **6**, and **7**, a process of treating a substrate may include steps of disposing the substrate S in the process chamber **100** (in S**10**), supplying the first gas and the second gas into the process chamber **100** (in S**20**), supplying the third gas into the exhausting line **320** (in S**30**), and examining whether the process on the substrate is finished (in S**40**).

[0076] In step S**10** of disposing the substrate S into the process chamber **100**, the substrate S may be loaded on the electrostatic chuck **110** of the process chamber **100**. When the substrate S is disposed in the process chamber **100**, a process of treating the substrate S may start. In step S**20** of supplying the first gas and the second gas into the process chamber **100**, the first and second gases for treating the substrate S may be supplied into the process chamber **100**. The first gas may be supplied at a first flow rate that is uniform or substantially uniform, and the second gas may be supplied at a non-uniform second flow rate that is pulsed with a period of T (e.g., varies according to a pulse wave having a period of a time period "T"). In step S**30** of supplying the third gas into the exhausting line **320**, the third